

16 Clusters Highlight Recreational, Historical and Environmental Points...

Hikers, Bikers, Canoers and Other Riders May Have a "Highway" to Call Their Own

A master plan for creating a statewide network of biking, hiking, riding and even canoe trails was recently unveiled after two years in the making.

The state's Economic Development Department and its contractors, identified 16 trail corridors or clusters which combine geographically contiguous areas into natural regional groups. This concept is designed to knit the state's unique recreational, cultural and historical resources into a large trails network which provides opportunities for all types of users.

"Trails development is a proven economic boon to small towns in Iowa, Missouri and other states in the Midwest," said Tom Doering of the economic development agency. "If we can provide opportunities for recreational users, tourism dollars will stay in Nebraska and new money will flow in."

The \$100,000-plus plan was primarily financed by a \$75,000 oil overcharge grant from the Energy Office. Additional funds were supplied by the Department of Roads and the National Park Service.

The plan is based on suggestions offered by more than 400 people who attended regional meetings. Others who offered suggestions were trails proponents and local government officials. The plan not only suggests future trail options, but includes existing trails in the proposed network.

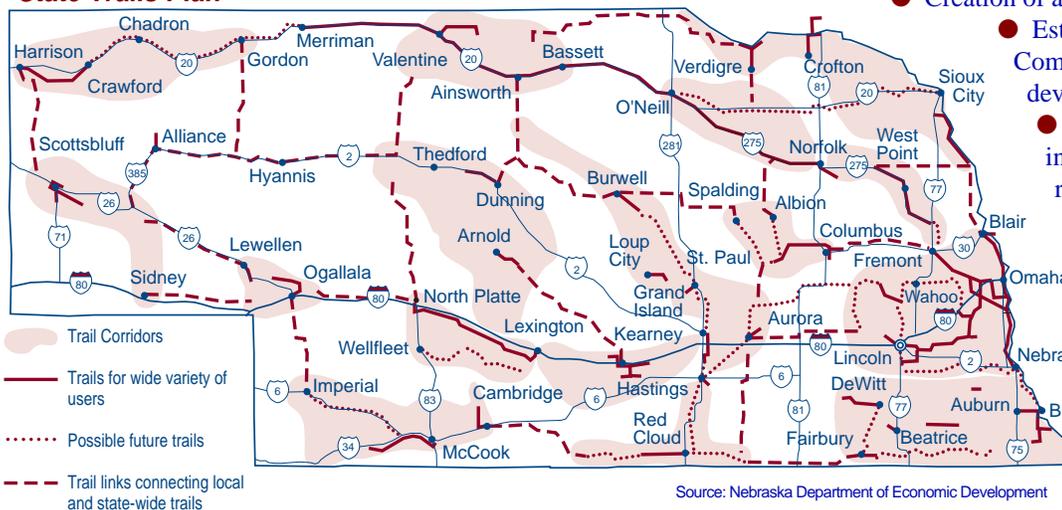
What's Next?

The trails plan also suggested several recommendations:

- Creation of a state trails coordinator.
- Establishment of a State Trails Commission to develop policies and development priorities.
- Identification of funding including local, state and federal revenue sources. New funding sources should also be examined including income tax check-offs, surcharges, special sales taxes on recreational equipment and registration fees for recreational vehicles.

See Trails on page 4

State Trails Plan



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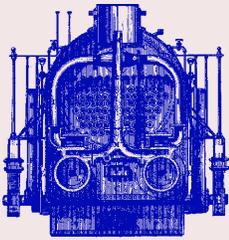
Energy Grants to Local Schools and Hospitals

Two Panhandle Hospitals Save 30% and More on Utility Bills

The Memorial Hospital in Gordon and the Regional West Medical Center in Scottsbluff have been saving 30 percent and more on their energy bills because of improvements financed in part by the Institutional Conservation Program.

An Antique Boiler

"The biggest energy savings were in the



boiler," said Jim Parks, plant services director for the Scottsbluff medical center. "The old boiler was 1948 vintage. It still worked, but it was horribly inefficient. It had to run year-round to provide hot water. With the new hot water heaters, we can shut down the boiler for five months of the year." The medical center replaced a steam-powered chiller with an electric one, installed gas-fired computer-controlled water heaters and replaced a boiler with a smaller one.

The cost of the improvements totaled \$152,067 of which \$70,080 was paid for with the federal grant. The medical center has averaged an annual energy bill savings of \$36,468, in

spite of an increase in electricity costs.

There's Nothing Quite Like an Old Chiller

The hospital in Gordon also replaced its chiller. The 1954 vintage steam model was retired and replaced by an electric one.

"The old chiller required a lot of maintenance," said Gladys Phemister, Chief Executive Officer for the hospital. "Even though we have added some high-tech equipment to our lab that produces a lot of heat and uses more electricity, our energy bills have still gone down."

The cost of the chiller replacement totaled \$125,275. The federal grant for the project covered half the cost of the improvement. In the first two years after the improvement was made, the hospital's energy bills declined by an average \$27,424 each year.

Both medical facilities have made other energy saving improvements in the buildings' energy-using systems.

For more information about these projects, contact **Jim Parks**, Regional West Medical Center, 4021 Avenue B, Scottsbluff 69361, phone (308)630-1438 or **R. Gladys Phemister**, Gordon Memorial Hospital, 300 East 8th Street, Gordon 69343, phone (308)282-0401. ■

Twenty different Nebraska schools and hospitals were recently selected to receive more than \$311,000 in federal matching grants from the U.S. Department of Energy to identify or make energy saving building improvements under the Institutional Conservation Program.

Nearly one-quarter of the funds, \$75,521, will finance energy saving improvements at Mid-Plains Community College in North Platte. Dana College in Blair will receive more than \$60,000 to make improvements in the Life Library and Mickelsen Hall buildings. The University of Nebraska-Kearney garnered \$20,982 to identify energy conserving improvements in 12 campus buildings.

Forty-three school or hospital buildings will be analyzed or have improvements made as a result of the grants. Most institutions that receive grants first locate energy savings and then apply for a second grant to finance the improvements. Most grants require that half the cost be paid by the school or hospital.

The federal energy grant program began in 1980. To date, more than 200 schools and hospitals in Nebraska have received \$8.9 million to make energy saving improvements. ■

The Latest Grant Winners

Institution	Make Improvements	Identify Improvements	Amount
Beatrice Community Hospital	1		\$ 5,250
Bennington Public Schools	1		\$ 25,682
College of St. Mary		1	\$ 1,475
Falls City Sacred Heart School	1		\$ 3,779
Gordon Elementary School	1		\$ 766
Dana College	2	1	\$ 61,910
Gothenburg Memorial Hospital	1		\$ 10,350
Kearney Public Schools	1		\$ 15,375
Lincoln St. John's Elementary		1	\$ 1,000
McCook Community College	2		\$ 3,075
Midland Lutheran College		8	\$ 11,291
Mid-Plains Community College/N.Platte	1		\$ 75,521
Omaha Holy Name School		1	\$ 2,360
Omaha Immanuel Medical Center		1	\$ 18,000
Omaha Roncalli High School	1		\$ 5,565
Seward Memorial Hospital	1		\$ 28,250
Southeast Community College/Milford	2		\$ 11,486
University of Nebraska/Kearney		12	\$ 20,982
University of Nebraska/Lincoln		2	\$ 4,550
University of Nebraska/Scottsbluff		1	\$ 4,986
TOTAL			\$ 311,653

Getting a Grant in '95

About \$310,000 will be available for grants in 1995. Two-page preapplications will be mailed to all eligible schools and hospitals in the state in early December.

The deadline for applying for grants is January 20, 1995. After

initial reviews, only those most likely to receive a federal grant must complete the full federal application. Grant winners will be selected by the U.S. Department of Energy by September 1, 1995. For more information, contact **Jeff Graef** in the Energy Office. ■

Is 1995 the Year Ethanol Supplants Oil?

Nebraska's Black Gold of The 90's

While Hitchcock county continues to earn the title of the most prodigious of the 18 oil-producing counties in the state, Trenton-area residents need only look at the latest production figures to realize that the state's oil boom is not likely to return in the near future.

The state's Oil and Gas Commission has released figures for the first five months of 1994 showing oil production in Nebraska has declined by 16.3 percent from last year — yet another record low. From January through May, 1.8 million barrels or 75.6 million gallons of oil had been pumped. The Energy Office projects that only 4.1 million barrels will be produced for the entire 1994 year. There are 42 gallons of oil in a barrel.

In 1993, a total of 4.89 million barrels or 205 million gallons of oil were produced in the state, a decline of nearly 11 percent from 1992. In just the past two years, oil production has declined by almost 25 percent. Crude oil production in Nebraska peaked in 1962 with 24.89 million barrels.

Oil Today, Ethanol Tomorrow

Yet just 70 miles to the north of Trenton in Sutherland sits a nearly completed 15 million gallon ethanol plant, a stark vision of the state's leap into production of clean-burning, renewable fuels. The Nebraska Nutrients plant in Sutherland is the smallest among the six plants either operating or under construction in the state.

The others are located in the eastern and central parts of the state:

Currently Operating	Location	Annual Volume (in gallons)
Chief Ethanol Fuels	Hastings	28.5 million
Minnesota Corn Processors	Columbus	35 million*
* Expanding to 70 million gallons in September		
Under Construction		
High Plains Corporation	York	35 million
[Estimated operational date is October]		
Cargill	Blair	70+ million
[Estimated operational date is March 1995]		
Construction Planned		
Nebraska Energy Cooperative	Aurora	25 million
[Estimated operational date is mid-1995]		

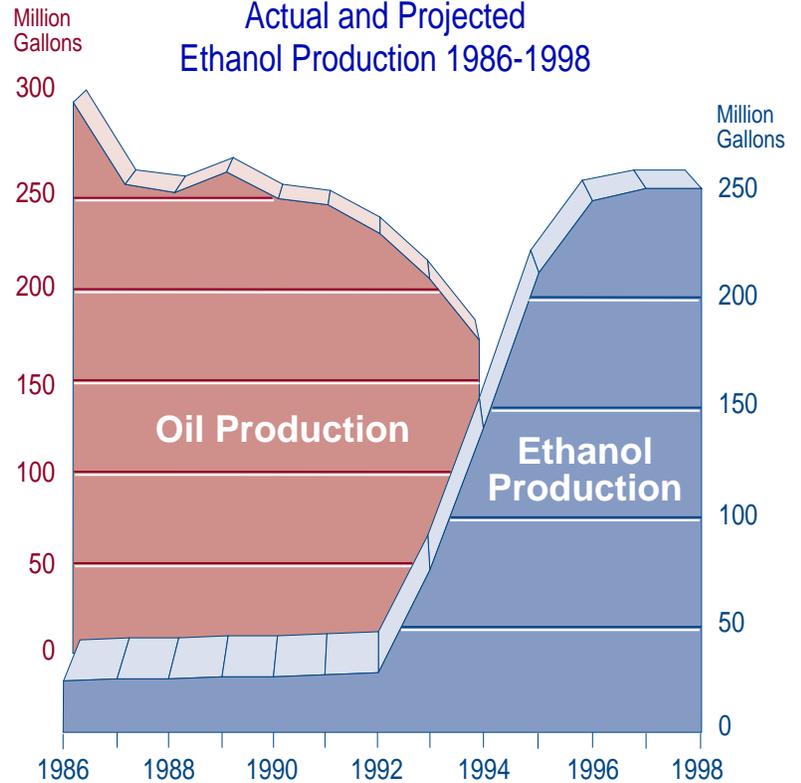
After all the plants are operational in 1995, Nebraska is expected to rank third nationally in ethanol production — after Illinois and Iowa — producing an estimated 250 million gallons annually, up from just 12.5 million gallons in 1991. That's a 20-fold increase in a mere four years. Not included in these totals are recently announced possible plants in the Kearney and Clay Center-Sutton areas.

Based on current projections of oil and ethanol production, the clean-burning corn fuel should surpass black gold production in the state sometime in 1995, if not sooner.

The Value-Added Solution

More than a decade ago, state economic developers were

Comparison of Actual and Projected Oil Production 1986-1994 and Actual and Projected Ethanol Production 1986-1998



Sources: Nebraska Ethanol Board and Nebraska Oil and Gas Commission

advised to add value to the state's already abundant agricultural bounty as a way to increase job opportunities and build the state's economy.

And they were told one of the easiest ways to add value was to process grain into other products before the grain was shipped out of the state. Today, that advice has become reality.

According to the Nebraska Corn Board, just a few years ago, less than one percent of the state's corn harvest was devoted to the manufacture of industrial products such as ethanol. By 1995, it is estimated that as much as ten percent of the annual corn crop may be processed into other products.

Generally, increased demand for corn by nearby ethanol production plants adds five to ten cents more per bushel to the price of corn. For a farmer with 400 acres devoted to corn, that means an additional \$2,400-\$4,800 annually.

But the corn is being used for more than just ethanol and related byproducts such as sweeteners, livestock feed and even plastic. The Cargill plant under construction in Blair is the likely location for the company's first full-scale lactic acid plant. The acid is the main ingredient for a patented process to produce

See Ethanol on page 4

biodegradable plastic resin. If a suitable market for the biodegradable plastic materializes, the addition to the plant could be under construction by 1996 or 1997.

It's Jobs, Jobs, Jobs

The job impact from ethanol production is considerable. It is estimated that more than 5,300 jobs were created to build the state's \$650 million ethanol plant infrastructure. While an estimated 600 jobs will be needed to operate the plants, another 2,100-3,600 will be created to indirectly support the operation of the plants. These indirect jobs can range from trucking to business and food services.

Iowa, the nation's number two ethanol producer, calculates that 12,000-15,000 jobs are attributed directly and indirectly to the industry. Since the two states will be nearly equal in ethanol production, it is likely that a similar number of Nebraskans will owe their jobs to the ethanol industry.

Beyond Corn

In August, the National Renewable Energy Laboratory, the nation's foremost ethanol research facility, announced a genetic engineering breakthrough which could dramatically reduce the cost of producing ethanol from biomass.

Biomass-to-ethanol research has been underway for a decade. Biomass is herbaceous and woody plants such as switchgrass, agricultural and forest residues such as crop waste and the cellulose portion of municipal solid waste.

The breakthrough by the federal laboratory, combined with the use of inexpensive feedstocks, could cut in half the per gallon cost of ethanol from biomass. Ten years ago, ethanol from these sources cost \$3.60 per gallon. Because of the research breakthrough that cost could be lowered to 60-70 cents per gallon.

"This breakthrough, together with our continuing advances in biomass conversion technology," said Christine Ervin, a federal energy official, "means that ethanol from biomass can be economically competitive today for blending with gasoline."

Today, most ethanol production uses yeast to ferment glucose. The laboratory engineered a bacterium which can not only ferment glucose but xylose as well. Because xylose can comprise 25-40 percent of biomass, the new bacterium greatly expands the portion of feedstocks which can be fermented into ethanol. Contact **Patrick Summers** at the Renewable Laboratory at (303)275-4050 for more information regarding this ethanol processing breakthrough.

Tested in Kearney, Sutton and Clay Center?

The recent announcement by a St. Louis firm of possible ethanol plants in central and western Nebraska is based, in part, on utilization of this new technology.

Quadrex hopes to use not only corn but corn stalks to produce ethanol. The patented biomass conversion process used by the company is currently being tested in Florida.

In September, the Buffalo County board of supervisors agreed to sponsor a \$50 million bond sale in order to finance a proposed ethanol plant in Kearney. Quadrex has indicated that

possible sites for small to medium-sized plants also include Clay Center and Sutton.

Even in Lincoln?

For the past two years, several studies have looked at the feasibility of using a portion of the state's garbage as a possible feedstock for ethanol production.

The 1993 study concluded that, technically, ethanol production from cellulosic biomass — the paper part of a town's garbage — was possible, but it might not be cost effective unless avoided landfill costs were included in the financial analysis. The study recommended examining the development of a small-scale, closed-loop model for the production of ethanol from municipal solid waste. In the closed-loop model, the ethanol producer is also the primary consumer of the fuel.

The 1994 follow-up study focused on the state's second largest city, Lincoln as a possible demonstration site for a waste-to-ethanol facility. Based on the city's solid waste stream, the study suggested that a demonstration-scale waste-to-ethanol plant using between 50-100 tons of waste paper per day could be feasible.

To close the loop, the study found that, based on the current number of ethanol-fueled vehicles operated by the city and state, about 40 percent of the ethanol produced at the plant would be used in government-owned vehicles.

The study estimated the cost of constructing a waste-to-ethanol facility at \$11-\$33 million.

Copies of the studies can be obtained by contacting **Jerry Loos** in the Energy Office. ■

TRAILS, CONTINUED FROM PAGE 1

According to Doering, the recommendations will be evaluated before any action is taken. Doering said the plan will initially be used in federal grant applications. He also said trail projects which are part of a statewide system are more likely to be financed by federal funds used by the state Roads Department.

Some of the suggested corridors have not yet been developed while others, such as the trail along the White River in the northwestern part of the state and the Cowboy Trail utilizing the abandoned Chicago Northwestern Railroad line, are in the early stages of development. Others, such as the MoPac trail from Lincoln to Elmwood, are more fully developed.

Copies of the plan with maps detailing each of the 16 corridors and design features, needs and potential issues can be obtained from **Tom Doering**, Department of Economic Development (402)471-3111 or **Kimberly Brown** in the Energy Office. ■

October 17, 1834

The first gas meter, a "gasometer," was patented by James Bogardus of New York City. It operated on the principle of a bellows, alternately being filled and emptied of gas, the pulsations being counted on a register.

The Oil Superhighway

Editor's Note

A recent natural gas pipeline explosion in New Jersey brought to light America's vast underground transportation network for moving fossil fuels. This is the first of several articles on the state's underground fossil fuel transportation system and deals exclusively with petroleum-based fuels — gasoline and related fuels.

Traveling south on Nebraska's Highway 81 to Geneva, the majestic panorama of the prairie is broken by what appears to be contenders for the world's largest marshmallow. Reality, of course, suggests otherwise.

Closer inspection reveals the marshmallows are nothing more than large white storage tanks — the visible portion of the state's petroleum lifeline which brings gasoline and other refined oil products into the state. Geneva is home to one of five of KANEB Pipeline Company's storage terminals. Similar terminals are located near eleven other Nebraska towns where KANEB, Williams, Heartland and Conoco pipelines bring refined petroleum products for storage. While Omaha's Williams Terminal is the largest by volume, Williams' Doniphan Terminal geographically supplies a much larger area.

Hidden from view, about 30 inches underground, pipelines ranging from six to 16 inches in diameter bring the refined petroleum products to the above-ground storage tanks.

Most of the gasoline and other refined products carried by the pipelines come from refineries in southern Kansas, Oklahoma and Texas. However, the state's westernmost terminal in Sidney, receives its refined products from Colorado and Wyoming.

Fungi-What?

With the exception of Conoco, the pipelines are common carriers, just like trucks. Pipeline companies simply move the refined products from producers to buyers, referring to the products as "fungible." That means if the pipeline picks up a barrel of gasoline in Kansas for delivery in Nebraska, the buyer doesn't necessarily get the barrel sent from Kansas. Every barrel of gasoline is identical and meets the same quality specifications.

The refined petroleum in the pipeline travels at a brisk walk. A gallon of gasoline picked up in Kansas City will arrive in Doniphan — about 300 miles — in about five days traveling 2.5 miles an hour. Despite the leisurely pace, the pipeline industry is highly automated, relying heavily on computerized information systems.

Once the fuels are delivered to storage tanks at the terminals, they are still many miles from getting into Nebraskans' fuel tanks. The last leg of the journey — from storage tank to the neighborhood filling station — is anchored by tank trucks traversing the state's highways.

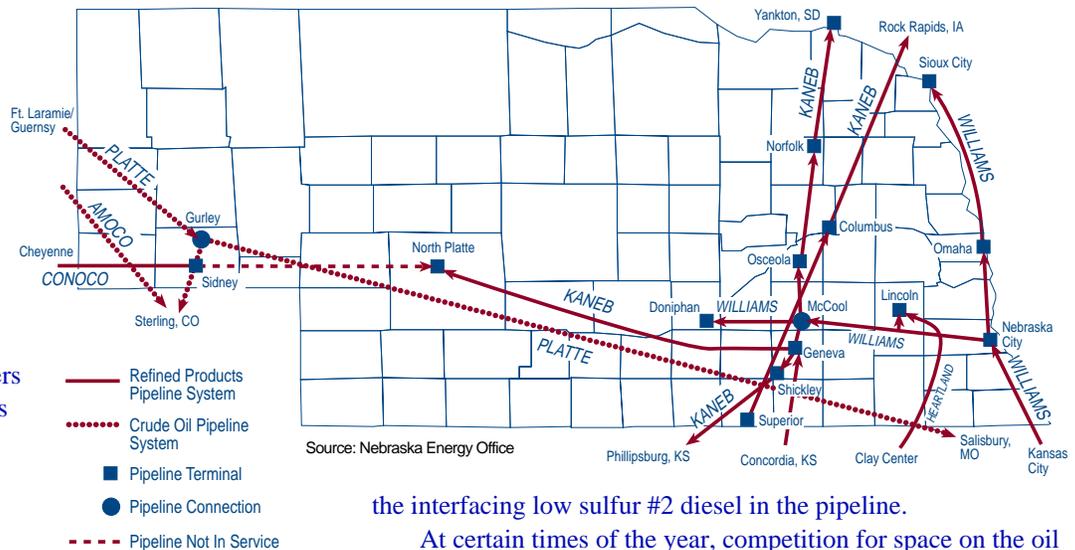
At the terminals, truckers use cards similar to credit cards to access a computer. What type of fuel, how much and which additives will be loaded into the tank truck are contained on the card. Any special additives which create a distinctive brand of gasoline are specified and mixed with the "fungible" gasoline. Also, ethanol is splash blended with the gasoline to produce ethanol blends at this point. By the time the truck departs the loading rack, a bill has been prepared and electronically sent.

One Road, Many Travelers

A variety of products — gasoline, fuel oil, jet fuel and propane — are shipped on the same pipeline one right after the other. Different products rarely mix because of "batching" — grouping fuels with the same physical characteristics together.

Batch sequences are arranged so that high volume distillates interface with high volume gasoline. For example, regular unleaded gasoline would be shipped, followed by premium gasoline, followed by regular unleaded gasoline before placing

Nebraska's Oil Pipeline System



the interfacing low sulfur #2 diesel in the pipeline.

At certain times of the year, competition for space on the oil highway can be very similar to getting a seat on a plane at Christmas. In Nebraska, companies have come to expect occasional outages of diesel fuel during spring planting season, irrigating season and harvest.

It is when seasonal demands are stronger than usual or unanticipated that extraordinary outages may occur. A cool, rainy June which suddenly turns hot and dry in July can produce a significant strain on supplies of diesel fuel used for irrigation.

See Oil Superhighway on page 7

Frequently Asked Questions...

5% Dollar and Energy Saving Loans

The Nebraska Energy Quarterly features questions asked about 5% Dollar and Energy Saving Loans. Loan forms may be obtained from participating lenders or the Energy Office.

Can a borrower perform the work being financed with a loan?

Yes. A borrower may perform any or all of the work on projects being financed with a loan. However, there can be no charge for the labor, only for the materials involved. Bids from the suppliers of the materials, including sales taxes and any other charges must be supplied to the lender.

Can labor charges be included in the loan request?

Yes. If an individual other than the borrower is performing the labor, the charges may be included in the loan request. A written bid from the person performing the work needs to be submitted to your lender

along with the bid for materials.

During the heating season, can approval of loans for furnaces be expedited?

Yes. During the winter (In Nebraska, the Energy Office considers September through May, "Winter."), quick approval of loans for replacement of furnaces, in certain situations, is standard procedure. If the unit has stopped working, the lender should call or fax the information on both the old and new units to the Energy Office, as well as the reason for the emergency. If the new furnace meets performance requirements for the loans, the Energy Office will contact the lender

to authorize installation of the replacement furnace.

Can a borrower have more than one loan?

Yes. A Nebraska resident may borrow up to \$20,000 for improvements on a single-family home; up to \$60,000 on a multiple-family building; up to \$75,000 on an agricultural operation and up to \$100,000 on a small business or non-profit operation. Additionally, loans for up to \$150,000 for alternate fuel vehicles and fueling facilities and telecommunications equipment are also available.

The borrower has the option of getting one loan or several loans over a period of time for the improvements as

long as the total amount borrowed does not exceed these maximums. Combining several loans into one is at the discretion of the lender. However, the term of the loan cannot exceed the term of the original loan. For example, in 1990, a borrower received a \$5,000 loan to replace a furnace and air conditioner. In 1994, a \$10,000 loan for window replacement was obtained. The maximum terms on these loans are 2000 and 2004, respectively. However, if the borrower combines the loans, the maximum term would be 2000. ■



CLIP AND SAVE



Energy Calling Card

Nebraska

Cedar-Knox Public Power District	(402) 357-2234
KN Energy, Inc.	(402) 462-2141
League of NE Municipalities—Utilities Section	(402) 476-2829
Lincoln Electric System	(402) 475-4211
Metropolitan Utilities District	(402) 449-8000
Nebraska Energy Office	(402) 471-2867
Nebraska Ethanol Board	(402) 471-2941
Nebraska Petroleum Council	(402) 477-4449
Nebraska Petroleum Marketers	(402) 474-6691
Nebraska Power Review Board	(402) 471-2301
Nebraska Public Power District	(402) 564-8561
Nebraska Rural Electric Association	(402) 475-4988
NMMP Energy, Inc.	(402) 474-4759
Norris Public Power District	(402) 821-3157
Oil and Gas Conservation Commission	(308) 254-4595
Omaha Public Power District	(402) 636-2000
Peoples Natural Gas	(402) 221-2000
Propane Gas Association of Nebraska	(402) 475-3996
Southern Public Power District	(308) 384-2350
Wayne County Public Power District	(402) 375-2769

National

Alliance to Save Energy	(202) 857-0666
American Coal Foundation	(202) 466-8630
American Council for an Energy Efficient Economy ...	(202) 429-8873
American Gas Association	(703) 841-8400
American Petroleum Institute	(202) 682-8000
American Public Power Association	(202) 467-2900
American Solar Energy Society	(303) 443-3130
American Wind Energy Association	(202) 383-2500
Argonne National Laboratory	(312) 972-5581
Edison Electric Institute	(202) 508-5000
Electric Power Research Institute	(415) 855-2000

Federal Energy Regulatory Commission	(202) 208-0200
Gas Research Institute	(202) 662-8989
National Energy Information Center	(202) 586-8800
National Renewable Energy Laboratory	(303) 275-4099
Nuclear Energy Institute	(202) 739-8000
Nuclear Regulatory Commission	(301) 492-7000
Oak Ridge National Laboratory	(615) 576-6349
Union of Concerned Scientists	(617) 547-5552
U.S. Council For Energy Awareness	(202) 293-0770
U.S. Department of Energy/Washington D.C.	(202) 586-5000
U.S. Department of Energy/Kansas City	(816) 426-4784
U.S. Senate Energy Committee	(202) 224-1017
U.S. House Committee on Energy and Commerce ...	(202) 225-0654
Western Area Power Administration	(303) 231-1513
Western Interstate Energy Board	(303) 573-8910
Women In Energy	(515) 282-6017

800 NUMBERS

Alternative Fuels Hotline	1-800-423-1363
Building Energy Standards Program Hotline	1-800-270-2633
Clean Cities Hotline	1-800-224-8437
Energy Efficiency And Renewable Energy Clearinghouse	1-800-523-2929
Motor Challenge Information Clearinghouse	1-800-862-2086
National Environmental Policy Act Information Line ..	1-800-472-2756
Radioactive Waste Management Information Center	1-800-225-6972

BY MODEM

Comprehensive Oil & Gas Information Source (for information on modem service)	1-202-586-8800
Electric Ideas Clearinghouse	1-800-797-7584
National Materials Exchange Network	1-800-858-6625
Nebraska OnLine (Nebraska only)	1-800-392-7932

Bringing Those Math and Science Scores Up...

Elementary Math and Science Teachers Get New Energy Tools

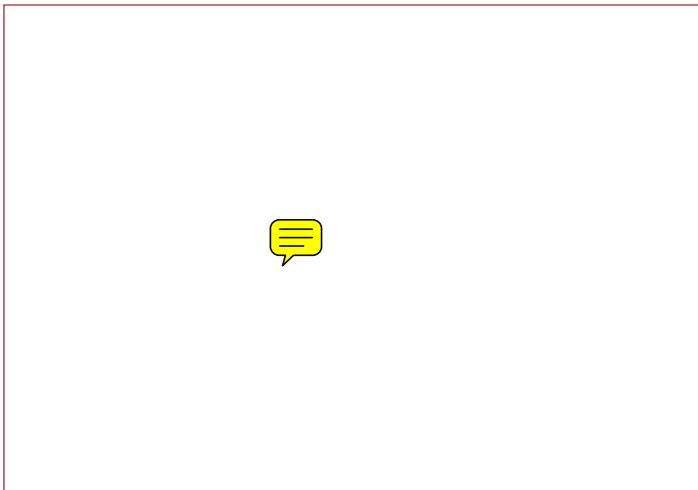
“Bursting with energy” may best describe two different training opportunities offered to several hundred elementary teachers earlier this summer.

“Energy provides a wealth of material for elementary classroom math and science teachers,” said Sue Kirby, Elementary Coordinator for the Nebraska Mathematics and Science Initiative K-12 Project and organizer of the sessions.

The Initiative seeks to improve math and science education in the state. The Energy Office matched a \$5.3 million National Science Foundation grant with \$500,000 in oil overcharge funds for the educational effort.

Aiming for Excellence

Twenty-two grade 4-6 teachers participated in the Initiative’s Teacher and Curriculum Enhancement Project Summer Institute.



Betty Cordel from a California-based math and science foundation leads a static electricity demonstration during the Summer Institute for teachers.

The five-week session included electricity and other topics. Betty Cordel from the American Institute on Math and Science Education Foundation in Fresno, California, led the week-long session, which included hands-on training in electricity, magnetism and other energy-related science topics.

Nebraska Energy Office and Nebraska Public Power District staff also led some activities, as well as shared resource ideas and materials with teachers.

Bursting with Energy

But they weren’t the only teachers getting a dose of energy. More than two hundred grade K-3 teachers across the state spent “A Day with Energy” in June and July, a hands-on Initiative workshop held at 11 sites. The one-day session was created to demonstrate “Bursts of Energy,” the model energy curriculum activities compiled by a team of elementary teachers.

Hands-on demonstrations in solar energy, hydropower and sound provided a sample of the approximately 20 lesson topics in the model curriculum collection. Later in the year, teachers will receive training in more of the new activities.

“These energy activities should be a valuable classroom tool because this curriculum was developed by teachers for teachers,” said Kimberly Brown of the Energy Office.

The curriculum reflects new instructional guidelines outlined in the state education department’s Mathematics and Science Frameworks, where energy is used as one of four themes integrated within the study of other topics. The curriculum also received a stamp of approval from University of Nebraska Physics Department faculty.

For more information about these or other energy education projects, contact **Sue Kirby** at the Nebraska Mathematics and Science Initiative, Kindergarten-12 Project Office, (402)472-9305 or **Kimberly Brown** in the Energy Office. ■

OIL SUPERHIGHWAY, CONTINUED FROM PAGE 4

1.5 Billion a Year

In 1992, over 1.5 billion gallons of refined petroleum products were consumed in Nebraska. Virtually all these products came into the state through this underground highway. Yet none of the gasoline or diesel fuel was produced from Nebraska crude. Although oil is produced in the state, it is shipped via Platte pipeline to Missouri, where it is processed or shipped to Chicago for refining.

In 1992, the state’s oil production equaled less than 15 percent of the petroleum used by Nebraskans. The value of oil pumped in the state totaled \$95.8 million in 1992. Yet, Nebraskans spent \$1.6 billion on petroleum products in the same year, a net outflow of over \$1.5 billion. ■

October 19, 1941

The first wind turbine to generate energy for an alternating-current central power system was placed in service in Grandpa’s Knob, Vermont. It was phased into the Central Vermont Public Service Corporation’s system. Synchronized operation continued for two hours, during which a maximum output of 800 kilowatts was delivered. The wind velocity at that time was 26 miles an hour. Palmer Cosslet Putnam was the inventor.



Information Services and Resources

The **Alternative Fuels Hotline** provides general and specific information on alternate vehicular fuels including fuel performance and availability. Call between 9am-5pm CT, Monday-Friday.

(800) 423-1363

Alternative Fuels Hotline
P.O. Box 12316
Arlington, VA 22209

The **Energy Efficiency and Renewable Energy Clearinghouse** provides fact sheets, brochures, videos and publications on energy efficiency and renewable energy. Call between 7am-4pm CT, Monday-Friday. **(800) 523-2929**

Four free factsheets are available from the Clearinghouse — *Alternatives to Air as Heat Sources for Heat Pumps (FS105)*, *Heat Pumps (FS143)*, *Insulation (FS142)* and *Converting a Home to Solar Heat (FS110)*. Please refer to the numbers in parentheses when ordering a publication. Write or call the:

Energy Efficiency and Renewable Energy Clearinghouse
P.O. Box 3048
Merrifield, VA 22116

The **Motor Challenge Information Clearinghouse** provides research, software, technical assistance and education materials on efficiency in electric motor systems. Call between 8am-7pm CT, Monday-Friday. **(800) 862-2086**

Motor Challenge Information Clearinghouse
P.O. Box 43171
Olympia, WA 98504-3171

The **National Energy Information Center** provides data and projections on energy production, consumption, prices and supplies. Call between 7am-4pm CT, Monday-Friday. Phone **(202) 586-8800**
Internet: infoctr@eia.doe.gov

National Energy Information Center
U.S. Department of Energy
Forrestal Bldg., EI-22, Room 1F048
1000 Independence Avenue, S.W.
Washington, D.C. 20585

The **National Renewable Energy Laboratory/Technical Inquiry Service** offers free technical information on solar and other renewable technologies for scientific and industrial professionals. Call between 9am-6pm CT, Monday-Friday. **(703) 487-4650**

Technical Inquiry Service
National Renewable Energy Laboratory
1617 Cole Boulevard
Golden, CO 80401

The Energy Office has recently updated and revised the agency's mailing lists including those who regularly receive the *Nebraska Energy Quarterly*. In some cases, names were deleted while titles were retained to minimize future changes. If there is a problem with your address label, please contact **Jerry** or **Linda** in the Energy Office.

In accordance with the American Disabilities Act, the state will provide reasonable accommodation to persons with disabilities. If you need reasonable accommodation to participate in any program or activity listed in this publication, please contact the Energy Office at 402-471-2867 to coordinate arrangements. Upon request, this publication may be available in alternative formats.

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Phone/Modem-only Information Services

The **Comprehensive Oil & Gas Information Source** provides energy data to subscribers on Internet. For more information, call between 7am-4pm CT, Monday-Friday. **(202) 586-8800**

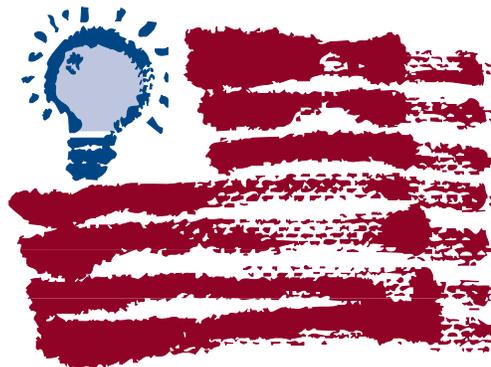
The **Electric Ideas Clearinghouse** offers a free source of commercial and industrial energy information and downloadable software on electronic bulletin board. To access call **(800) 797-7584**.

The **National Materials Exchange Network** provides free advice via computer modem on recycling and reducing disposal costs. Call 24 hours per day. Modem access **(800) 858-6625** General assistance **(509) 325-0507**

Nebraska Online provides several services by modem — a development services directory, calendar of events, bulletin board referral, electronic databases, job listings and mail. Modem access is **(800) 392-7932** (Nebraska Only) and **(402) 471-4020** (Lincoln only). Nebraska OnLine may also be available at your nearest local university or community college library.

The **Wind Information Network** provides updates on wind technology via EcoNet, a nonprofit electronic service for the global environmental community. For more information contact Tom Gray at the American Wind Energy Association **(202) 282-2500** or at tgray@igc.apc.org or Windmail/MCI ID:664-8666. ■

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